CLAIMS:

1. A plasma etching method comprising the steps of:

placing a sample on a sample stage arranged in a processing chamber;

supplying a processing gas toward the center of the sample through a shower plate from the electrode arranged in opposed relation to the sample stage;

generating a plasma in the processing chamber;

applying RF power between the sample stage and the electrode and thus providing the charged particles in the plasma with the energy to enter the sample;

neutralizing the charged particles which have entered the electrode from the plasma generated by the application of the RF power and which have entered the processing gas supply holes of the shower plate, other than the charged particles that have entered the sample; and

etching the sample using the plasma.

2. A plasma etching method according to claim 1, wherein the processing gas is supplied toward the center of the sample in such a manner that the surface of the shower plate is segmented into a plurality of areas, and the processing gas is supplied in the same direction in each of the segmented areas.

3. A plasma etching method according to claim 1,

wherein the interior of the processing chamber is maintained at a processing pressure of not higher than 10 Pa.

4. A plasma etching method for generating a plasma in a processing chamber and etching a sample using the plasma, comprising the steps of:

supplying a processing gas from a shower plate arranged on the electrode in opposed relation to the sample;

maintaining the processing pressure in the processing chamber at not higher than 10 Pa;

generating a plasma between the sample and the electrode;

neutralizing the charged particles entering, from the plasma, a gas chamber formed between the electrode and the shower plate; and

etching the sample using the charged particles entering the sample from the plasma.

5. A plasma etching method for etching a sample under the processing pressure of not higher than 10 Pa, wherein the processing gas is supplied from a position not less than 30 mm and not more than one half of the diameter of the sample in distance from the sample, toward the center of the sample at an inclination angle (θ) to the surface of the sample, smaller than $\tan^{-1}(t/d)$, where t is the thickness of the shower plate, and d is the diameter of the processing gas supply hole.